PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

IN THE APPLICATION OF:

RONALD E. STEELE

CASE NO.: RD8350USNA APPLICATION NO.: 10/656,057

CONFIRMATION NO.: 9391 GROUP ART UNIT: 1791

EXAMINER: PATRICK NEAL BUTLER FILED: SEPTEMBER 5, 2003

FOR: IMPROVED POLYAMIDE YARN PROCESS AND POLYAMIDE YARN

APPEAL BRIEF PURSUANT TO 37 C.F.R. §41.37

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attention: Mail Stop Appeal Brief - Patents

Madam:

This is an appeal to the Board of Appeals from the Final Office Action mailed February 25, 2009, in which the Examiner finally rejected claims 1-5 and 7 of the above-identified application. Appellant timely filed a Notice of Appeal on May 26, 2009. Therefore, the due date for filing the Appeal Brief is Monday, July 27, 2009 without extension of time.

As required by 37 C.F.R. §41.37, a single copy of this brief is being filed with the filing fee of $540.00. Please charge all fees to Deposit Account No. 50-3223.

1. REAL PARTY IN INTEREST

The real party in interest in the present appeal is Invista North America S.à r.l., a *société à responsabilité limitée*, incorporated under the laws of Luxembourg, having acquired rights from E.I. DuPont De Nemours and Company by way of an assignment recorded in the United States Patent and Trademark Office at Reel 015286, Frame 0708, having acquired rights from the inventor by way of an assignment recorded in the United States Patent and Trademark Office at Reel 014367, Frame 0432.

2. RELATED APPEALS AND INTERFERENCES

No related appeals or interferences are known to the Appellant or to Appellant's legal representative which will directly affect or be directly affected by or have bearing on the Board's decision in this appeal.

3. STATUS OF THE CLAIMS

Claims 1-7 are currently pending in the application. Claims 1-5 and 7 stand finally rejected and claim 6 has been withdrawn. The rejections of Claims 1-5 and 7 are being appealed.

4. STATUS OF AMENDMENTS

No amendments were made subsequent to the final office action.

5. SUMMARY OF CLAIMED SUBJECT MATTER

The independent claims include 1 and 7. Support for each claim is found in the specification as follows:

The subject matter of claim 1 is described generally at page 2, lines 34 to page 3, line 18 with specific support following for a process for making a synthetic melt spun polyamide filament comprising the steps of:

supplying polyamide polymer with an RV of 36 to 38 to a solid phase polycondensation apparatus; (page 4, line 22)

humidifying a purge gas with water vapor; (page 4, line 24)

supplying said purge gas to the solid phase polycondensation apparatus at a flow rate in the range of about 2 to about 3 kg/hour per kg of polymer per hour; (page 3, lines 2-3)

treating the polyamide polymer in the solid phase polycondensation apparatus with the purge gas at a solid phase polycondensation system pressure of about 110 to about 120 kPascal; (page 4, lines 23-24)

conveying the treated polyamide polymer to a melt extrusion apparatus; (page 4, lines 34-35)

melting the polyamide polymer in the melt extrusion apparatus; (page 4, lines 35-36)

extruding the melted polyamide polymer through a spinneret plate; (page 4, lines 37-38) and

forming at least one continuous filament (page 5, line 2) of polyamide polymer with a yarn RV of about 51 to about 54 (page 5, line 12).

The subject matter of claim 7 is described generally at page 2, lines 34 to page 3, line 18 with specific support following for process for making a synthetic melt spun polyamide filament comprising the steps of:

supplying polyamide polymer with an RV of 36 to 38 to a solid phase polycondensation apparatus; (page 4, line 22)

treating a nitrogen comprising purge gas with water vapor, (page 4, line 24),

supplying said purge gas to the solid phase polycondensation apparatus at a flow rate in the range of about 2 to about 3 kg/hour per kg of polymer per hour; (page 3, lines 2-3)

treating the polyamide polymer in the solid phase polycondensation apparatus with the purge gas at a solid phase polycondensation system pressure of about 110 to about 120 kPascal; (page 4, lines 23-24)

conveying the treated polyamide polymer to a melt extrusion apparatus; (page 4, lines 34-35)

melting the polyamide polymer in the melt extrusion apparatus; (page 4, lines 35-36)

extruding the melted polyamide polymer through a spinneret plate; (page 4, lines 37-38) and

forming at least one continuous filament(page 5, line 2) of polyamide polymer with a yarn RV of about 51 to about 54. (page 5, line 12)

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. Are claims 1-3, 5 and 7 obvious under §103(a) over U.S. Patent No. 6,234,390 to Schwinn et al. ("Schwinn") ?

II. Is claim 4 obvious under §103(a) over Schwinn in view of U.S. Patent No. 4,034,034 to Eberius ("Eberius")?

III. Is claim 4 obvious under §103(a) over Schwinn in view of Fourné (Synthetic Fibers, p.359) ("Fourné")?

7. ARGUMENTS

I. Claims 1-3, 5 and 7 are not obvious under §103(a) over U.S. Patent No. 6,234,390 to Schwinn et al. ("Schwinn").

Schwinn fails to teach every element of the present claims and as such fails to establish a *prima facie* case of obviousness. Specifically, Schwinn fails to teach the use of a polyamide polymer flake having an RV in the range of 36-38, fails to teach the formation of a continuous filament of polyamide polymer with a yarn RV of about 51 to 54, and fails to teach the step of adding water vapor to a purge gas.

Schwinn teaches the use of a polyamide polymer flake having an RV in the range of about 40 to about 60 for introduction to an SPP process to achieve an RV in the range of 90 to 120. The present invention is characterized by a starting RV of 36 to 38. After processing the polymer flake according to the SPP steps of the present invention, this originally 36 to 38 RV flake has an RV in the range of 50 to 53 (see in the Specification on page 4, line 34). After submitting this "post-SPP" processed polymer flake to a melt spinning process, the measured RV of yarns is about one RV unit increased or a range of 51 to 54 (see in the Specification on page 5, line 12). Such an RV range is within that range of RV from which the Schwinn et al. SPP process commences (see Schwinn et al., Column 7, lines 30-31).

Furthermore, Schwinn fails to provide any teaching of humidifying the purge gas prior to introduction to an SPP apparatus, in other words, Schwinn fails to teach the step of adding water vapor to the purge gas. Not only does Schwinn fail to teach the step of adding water vapor to the purge gas, but Schwinn teaches that reducing the humidity of the purge gas is an essential step.

The Examiner has stated at page 3 of the Office Action that "Gas sent through the SPP vessel 16 to remove water is directed back into the SPP vessel to constitute 50% of purge gas (humidifying a purge gas with water vapor) (see col. 8, lines 56-60; col. 9, lines 15-21)." Appellant respectfully submits that this is an overgeneralization of Schwinn that results in a mischaracterization of Schwinn's process. The passage at col. 8, lines 56-60 reads:

The serially connected dual desiccant bed regenerative drying system 14 is connected in parallel with the first conduit 34 between the blower 30 and the gas inlet 24. The drying system 14 is for drying the circulating gas increasing the removal of water from the flack in the SPP vessel 16.

The passage at col. 9, lines 15-21 reads:

Thus, it is more preferred that the portion of the gas that is passed through the drying system 14 is about 50% to 100% of the total gas stream circulated through the SPP vessel 16. Most preferred, the portion of the gas that is passed through the drying system 14 is about 70% to about 90% of the total gas stream circulate thought the SPP vessel 16.

Together, these two passages point out the polymer flake, including some amount of water absorber thereon enters the SPP **16**. The nitrogen purge gas passes through the SPP **16** from inlet **24** and exits at outlet **26**, as shown in FIG. 1. A portion of the gas from outlet **26** then enters the drying system **14**. The amount of gas that enters the drying system is from 50% to 100% as described above (Schwinn Col. 9, lines15-21). Therefore, up to 50% of the purge gas is combined with the dried gas (from which water has been removed by the drying system **14**) and returned to the SPP at inlet **24**. The humidity of the gas at the inlet **24** is necessarily less than that that has originally entered at inlet **20** and less than the gas that has exited at outlet **26** (a portion of which goes to the drying system **14**). Consequently, the purge gas that enters at inlet **24** includes less water than that which is introduced to the SPP **16** at inlet **20**. As such Schwinn's system serves to remove water vapor which not only fails to disclose the present humidifying step, but also teaches away from the humidifying step of present invention.

The Examiner has taken the position that because only a portion of the purge gas passes through a drying system, when that portion of the dried gas is rejoined with the purge gas, the dry gas is "humidified." This narrow view of Schwinn's invention is contrary to the purpose of Schwinn and is inappropriately taken out of the context of Schwinn's invention and fails to achieve the element of "humidifying a purge gas with water vapor" as in claim 1 or "treating a nitrogen comprising purge gas with water vapor" as in claim 7. Schwinn is clearly removing water from the purge gas which is contrary to the intentional addition of water vapor in the present invention. Nowhere in Schwinn is there a disclosure of increasing humidity or adding water vapor to a purge gas.

This fact is emphasized by Schwinn which also teaches the use of a very low dew point temperature circulating gas in the SPP vessel, no more than about 20°C but as low as –20°C. Pointing out that Schwinn rigorously avoids water vapor, as measured by dew point temperature, in the treatment vessel.

Schwinn fails to include the step of humidifying the purge gas in addition to purposefully minimizing the amount of water vapor present in the purge gas. Therefore, Schwinn not only fails to establish a *prima facie* case of obviousness for failing to disclose every element of the present claims, but also teaches away from the present invention. Accordingly, reconsideration and withdrawal of the rejections of claims 1-3, 5, and 7 are appropriate and respectfully requested.

II. Claim 4 is not obvious under §103(a) over Schwinn in view of U.S. Patent No. 4,034,034 to Eberius.

Eberius is cited to show additional features of dependent claim 4 which are not included in independent claim 1. Eberius provides no teaching or suggestion that overcomes the deficiencies of Schwinn described above in point (I) in establishing a *prima facie* case of obviousness. Therefore, reconsideration and withdrawal of this rejection of claim 4 is respectfully requested.

III. Claim 4 is not obvious under §103(a) over Schwinn in view of Fourné.

Fourné is cited to show additional features of dependent claim 4 which are not included in independent claim 1. Fourné provides no teaching or suggestion that overcomes the deficiencies of Schwinn described above in point (I) in establishing a *prima facie* case of obviousness. Therefore, reconsideration and withdrawal of this rejection of claim 4 is respectfully requested.

CONCLUSION

In view of the remarks set forth above, reconsideration and withdrawal of the rejections are appropriate and respectfully requested. Appellant submits that the present claims are patentably distinct over the art and in allowable form.

Date: July 27, 2009

Respectfully submitted,

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8. CLAIMS APPENDIX

What is claimed is:

1. (previously presented) A process for making a synthetic melt spun polyamide filament comprising the steps of:
supplying polyamide polymer with an RV of 36 to 38 to a solid phase polycondensation apparatus;
humidifying a purge gas with water vapor;
supplying said purge gas to the solid phase polycondensation apparatus at a flow rate in the range of about 2 to about 3 kg/hour per kg of polymer per hour;
treating the polyamide polymer in the solid phase polycondensation apparatus with the purge gas at a solid phase polycondensation system pressure of about 110 to about 120 kPascal;
conveying the treated polyamide polymer to a melt extrusion apparatus;
melting the polyamide polymer in the melt extrusion apparatus;
extruding the melted polyamide polymer through a spinneret plate; and
forming at least one continuous filament of polyamide polymer with a yarn RV of about 51 to about 54.

2. (original) The process of claim 1, further including quenching and cooling the filament.

3. (original) The process of claim 2, further including post-treating the filament and winding up the filament.

4. (original) The process of claim 3, further including wiping the spinneret plate on the capillary exit side, in cycles, wherein each wiping cycle is separated by about 8 to about 12 hours.

5. (original) The process of claim 1 wherein the purge gas is comprised of nitrogen gas supplied at a flow rate in the range of about 2 to about 3 kg/hour per kg of polymer per hour.

6. (withdrawn) A delustered synthetic melt spun polyamide filament having a YARN QUALITY greater than about 32.8, wherein YARN QUALITY is defined according to,

YARN QUALITY = [tenacity (grams/denier)] x (% elongation)$^{1/2}$;

said yarn prepared by a process comprising the steps of:

providing a synthetic polyamide polymer to a solid phase polycondensation apparatus,

treating the synthetic polyamide polymer in the solid phase polycondensation apparatus t a system pressure in the range of about 110 to about 120 kPascal;

conveying the treated polyamide polymer to a melt extrusion apparatus;

melting the polyamide polymer in the melt extrusion apparatus;

extruding the melted polyamide polymer through a spinneret plate;

and

forming at least one continuous filament of polyamide polymer.

7. (previously presented) A process for making a synthetic melt spun polyamide filament comprising the steps of:

supplying polyamide polymer with an RV of 36 to 38 to a solid phase polycondensation apparatus;

treating a nitrogen comprising purge gas with water vapor,

supplying said purge gas to the solid phase polycondensation apparatus at a flow rate in the range of about 2 to about 3 kg/hour per kg of polymer per hour;

treating the polyamide polymer in the solid phase polycondensation apparatus with the purge gas at a solid phase polycondensation system pressure of about 110 to about 120 kPascal;

conveying the treated polyamide polymer to a melt extrusion apparatus;

melting the polyamide polymer in the melt extrusion apparatus;

extruding the melted polyamide polymer through a spinneret plate; and

forming at least one continuous filament of polyamide polymer with a yarn RV of about 51 to about 54.

9. EVIDENCE APPENDIX

No additional evidence was submitted in this application including evidence pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132.

10. RELATED PROCEEDINGS APPENDIX

No related appeals or interferences are known to Appellant or Appellants' legal representative which will directly affect or be directly affected by or have bearing on the Board's decision in this appeal.